Amendments to the Claims

Applicant presents claim amendments below indicating the changes with insertions indicated by underlining and deletions indicated by strikeouts and/or double bracketing.

Claims

1. (Original) A method of detecting one or more artifacts in a virtual image synthesized from stereo images, the method comprising:

generating a disparity map from the stereo images;

generating a projected image for each of the stereo images by projecting each stereo image into a target viewpoint based on the disparity map;

computing color-distances between corresponding pixels in the projected images to produce a difference map; and

designating one or more locations in the difference map associated with a computed color-distance exceeding a threshold as the one or more artifacts.

2. (Original) The method of claim 1 further comprising:

generating an occlusion map from the stereo images; and

combining the occlusion map into the projected image.

3. (Original) The method of claim 1 further comprising:

identifying an artifact pixel in the virtual image that corresponds with one of the artifacts;

defining a source patch relative to the artifact pixel in the virtual image;

identifying a disparity point in the disparity map that corresponds to the artifact pixel;

defining a disparity patch relative to the disparity point in the disparity map; and

generating a filter map from the source patch and the disparity patch.

4. (Original) The method of claim 3 wherein the filter map represents a foreground filter map.

5. (Original) The method of claim 3 wherein the filter map represents a background filter map.

6. (Original) The method of claim 3 further comprising:

filtering the disparity patch before generating the filter map.

7. (Original) The method of claim 1 further comprising:

generating a filter map from a source patch of the virtual image and a disparity patch of the disparity map;

determining a candidate exemplar patch from each stereo image based on the filter map.

8. (Original) The method of claim 7 wherein the filter map represents a background filter map and further comprising:

filtering the source patch using the background filter map; and

selecting one of the candidate exemplar patches as an uncontaminated background exemplar patch based on comparison to the background-filtered source patch.

9. (Original) The method of claim 7 further comprising:

extracting an unoccluded background exemplar patch from an unoccluded foreground candidate exemplar patch;

approximating an occluded background exemplar patch from an occluded foreground candidate exemplar patch; and

determining an uncontaminated foreground exemplar patch from the unoccluded background exemplar patch and the occluded background exemplar patch.

10. (Original) The method of claim 9 further comprising:

determining a transparency weight from the unoccluded background exemplar patch and the occluded background exemplar patch.

11. (Original) The method of claim 7 further comprising:

generating a target patch as a composite of a background exemplar patch and a foreground exemplar patch.

12. (Original) The method of claim 11 further comprising:

replacing the source patch of the virtual image with the target patch.

13. (Original) The method of claim 1 further comprising:

generating a target patch as a weighted average of a background exemplar patch and a foreground exemplar patch, based on a transparency weight.

14. (Currently Amended) A computer program product encoding a computer program for executing on a computer system a computer process for detecting one or more artifacts in a virtual image synthesized from stereo images, the computer process comprising:

generating a projected image for each of the stereo images by projecting each stereo image into a target viewpoint based on a disparity map of the stereo images;

computing differences between corresponding pixels in the projected images to produce a difference map, wherein a computed difference exceeding a threshold indicates an artifact;

generating an occlusion map from the stereo images; and

combining the occlusion map into the projected image.

15. (Canceled)

16. (Currently Amended) ~~The computer program product of claim 14 wherein the computer process further comprises:~~

A computer program product encoding a computer program for executing on a computer system a computer process for detecting one or more artifacts in a virtual image synthesized from stereo images, the computer process comprising:

generating a projected image for each of the stereo images by projecting each stereo image into a target viewpoint based on a disparity map of the stereo images;

computing differences between corresponding pixels in the projected images to produce a difference map, wherein a computed difference exceeding a threshold indicates an artifact;

identifying an artifact pixel in the virtual image that corresponds with one of the artifacts;

defining a source patch relative to the artifact pixel in the virtual image;

identifying a disparity point in the disparity map that corresponds to the artifact pixel;

defining a disparity patch relative to the disparity point in the disparity map; and

generating a filter map from the source patch and the disparity patch.

17. (Original) The computer program product of claim 16 wherein the filter map represents a foreground filter map.

18. (Original) The computer program product of claim 16 wherein the filter map represents a background filter map.

19. (Original) The computer program product of claim 16 wherein the computer process further comprises:

filtering the disparity patch before generating the filter map.

20. (Currently Amended) ~~The computer program product of claim 14 wherein the computer process further comprises:~~

A computer program product encoding a computer program for executing on a computer system a computer process for detecting one or more artifacts in a virtual image synthesized from stereo images, the computer process comprising:

generating a projected image for each of the stereo images by projecting each stereo image into a target viewpoint based on a disparity map of the stereo images;

computing differences between corresponding pixels in the projected images to produce a difference map, wherein a computed difference exceeding a threshold indicates an artifact;

generating a filter map from a source patch of the virtual image and a disparity patch of the disparity map; and

determining a candidate exemplar patch from each stereo image based on the filter map.

21. (Original) The computer program product of claim 20 wherein the filter map represents a background filter map and the computer process further comprises:

filtering the source patch using the background filter map; and

selecting one of the candidate exemplar patches as an uncontaminated background exemplar patch based on comparison to the background-filtered source patch.

22. (Original) The computer program product of claim 20 wherein the computer process further comprises:

extracting an unoccluded background exemplar patch from an unoccluded foreground candidate exemplar patch;

approximating an occluded background exemplar patch from an occluded foreground candidate exemplar patch; and

determining an uncontaminated foreground exemplar patch from the unoccluded background exemplar patch and the occluded background exemplar patch.

23. (Original) The computer program product of claim 22 wherein the computer process further comprises:

determining a transparency weight from the unoccluded background exemplar patch and the occluded background exemplar patch.

24. (Original) The computer program product of claim 20 wherein the computer process further comprises:

generating a target patch as a composite of a background exemplar patch and a foreground exemplar patch.

25. (Original) The computer program product of claim 24 wherein the computer process further comprises:

replacing the source patch of the virtual image with the target patch.

26. (Original) The computer program product of claim 14 wherein the computer process further comprises:

generating a target patch as a weighted average of a background exemplar patch and a foreground exemplar patch, based on a transparency weight.

27. (Original) A system for detecting one or more artifacts in a virtual image synthesized from stereo images, the system comprising:

an image warp module that generates a projected image for each of the stereo images by projecting each stereo image into a target viewpoint based on a disparity map of the stereo images;

an image distancing module that computes color-distances between corresponding pixels in the projected images to produce a difference map; and

a thresholding module that designates one or more locations in the difference map associated with a computed color-distance exceeding a threshold as the one or more artifacts.